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OBJECTIVE

To obtain a progressive position as a **Post-doctoral Fellow** to allow for growth and advancement

VITAE

Surname: Ali **Given names:** Nicholas

DEGREES AWARDED:

B. Eng.	Ryerson University, Toronto, Ontario
M.A.Sc.	Ryerson University, Toronto, Ontario
PhD	University of Ottawa, Ottawa, Ontario (Thesis to be defended)

REFEREED CONFERENCE PUBLICATIONS:

1. Ali, N., Behdinan, K., and Fawaz, Z., "Structural and Vibrational Design Optimization of Structures using GA based Finite Element Analysis," CSME forum, April 2002.
2. Ali, N., and Behdinan, K., " Conceptual Geometry Optimization of Aircraft using AI Techniques," International Conference on Multidisciplinary Design in Engineering, CSME, Nov. 21, 2001.
3. Ali, N., and Behdinan, K., "Stability and Control in Aircraft Conceptual Design Using Genetic Algorithms," 1st AIAA Aircraft Technology, Integration and Operation Forum, San Francisco, Paper No., AIAA-2001-5257, Sept. 2001
4. Ali, N., and Behdinan, K., "Conceptual Aircraft Design- A genetic Search and Optimization Approach," ICAS 2002 Conference, Toronto, Sept. 2002.
5. Ali, N., and Behdinan, K.," Application of Genetic Algorithms to Aircraft Conceptual Design with Constraints in Stability and Control," Proceeding for the 48th Annual CASI Conference, April 29-May 2, 2001, pp. 215-225.
6. Ali, N., Behdinan, K., and Fawaz, Z., "Design Optimization of Structures using a GA based Finite Element Analysis," 3rd. Annual AIAC Aerospace Technology Collaboration Forum, Montreal, May 1st 2002.
7. Ali, N. " Predicting threshold of injury and probability of injury for the substructures of diarthodial joints: A close look at the human knee joint, 2007
8. Ali, N., "Key Challenges Confronting Biomechanists aiming to predict ACL injury mechanisms," 32nd Conference of the Canadian Medical and Biological Engineering Society, Calgary, May 22nd 2009
9. Ali, N., and Farah, A., "An alternative Approach to better predict Injury mechanisms to the ACL during non-contact events," 22nd Canadian Congress of Applied Mechanics, Halifax, May 31st 2009
10. Ali, N., Robertson, G., Rouhi, G., "Applicability of operations research and artificial intelligence approaches to non- contact anterior cruciate ligament injury studies," ISBS, Limerick, Ireland, Sept 17th 2009.
11. Ali, N., Robertson, G., Rouhi, G., "A new approach to postural stability research using the inverted pendulum mode," CSB, Kingston, Ontario, Jun 9-11th 2010
12. Ali, N., Robertson, G., Rouhi, G., "Body kinematics during single-leg landing from varying heights and distances– implications for non-contact ACL injuries: case report, Porto, Portugal, June 28th -Jul 2nd 2011.

REFEREED JOURNAL PUBLICATIONS:

1. Ali, N., and Behdinan, K., "Employing Soft Computing Techniques to study Stability and Control in Aircraft Design," Technical Note: Journal of Guidance and Control, AIAA, 2000.
2. Ali, N., Behdinan, K., and Fawaz, Z., "Applicability and Viability of a GA based Finite Element Analysis Architecture for Structural Design Optimization," Computers and Structures, 2002.
3. Ali, N., and Behdinan, K., "Optimal Geometrical Design of Aircraft using Genetic Algorithms," CSME Journal, 2001.
4. Ali, N., and Rouhi, G., "Barriers to understanding ACL injury mechanisms," The Biomedical Engineering Online Journal, 2010, 4, 178-189.
5. Ali, N., Robertson, G., Rouhi, G., "Utility of Operations Research and Artificial Intelligence Approaches to Non-contact Anterior Cruciate Ligament Injury Studies–Interface, Status, and Potential" Transactions of the Canadian Society of Mechanical Engineers, 2011, 35, 145-159.
6. Ali, N., Robertson, G., Rouhi, G, "Body kinematics and kinetics during single-leg landing from various vertical heights and horizontal distances: Implications for non-contact ACL injury prevention, The Knee, In Press
7. Ali, N., Andersen, M.S., Rasmussen, J., Robertson, G., Rouhi, G "Development, Validation and presentation of subject specific musculoskeletal models applied to single-leg landings – Implications for risk of non-contact ACL injury, Computer Methods in Biomechanics & Biomedical Engineering, In Press
8. Ali, N., Robertson, G., Rouhi, G "Effect of variation in gender, vertical height and horizontal distance on single-leg landing biomechanical variables related to non-contact ACL injuries, Journal of Human Kinetics, Accepted

EDUCATION

Doctorate in Philosophy, PhD: University of Ottawa, Ottawa, Ontario (Thesis to be defended)
Field of Study: Health Science (School of Human Kinetics)
Major: Predicting risk factors to non-contact ACL injury during single-leg landing sports
Doctoral Thesis:
. Predicting risk factors to non-contact ACL injuries during single-leg landing sports
. Musculoskeletal modeling of lower extremity to enable injury risk prediction during sports
. Proposing new study approaches to predict risk factors of non-contact ACL injury
. Proposing new method to study postural stability

Honors Masters of Applied Science Degree, M.A.Sc. in Mechanical Engineering: Ryerson University, Toronto, Ontario
Field of Study: Structures and Thermo fluids
Major: Optimization of Mechanical Engineering Systems
Masters Thesis:
. Geometrical design of aircraft
. Design of engineering structures under various constraints and loading conditions (Extensive FEA)
. Armour design using established penetration analytical models and numerical methods (Dynamic Analysis)

Bachelors of Aerospace Engineering Degree, B.Eng.: ***Ryerson University, Toronto, Ontario***
Field of Study: Aerospace Engineering
Major: Optimization using Artificial Intelligence Techniques
Bachelors Thesis:
. Conceptual design and optimization of aircraft using genetic algorithms
. Areas studied are Structures, Aerodynamics, Sizing, Stability and Control, CFD and Performance
. Optimization performed with the intent to minimize weight and cost

ACHIEVEMENTS

2011: . Pass advanced course at Aalborg University, Denmark in Musculoskeletal Modeling by Multibody Dynamics.

2011: . Winner of CSB and ISB travel grant

2011: . Ontario Graduate Scholarship (OGS)

2009: . Ontario Graduate Scholarship (OGS)

2007-2011: . University of Ottawa Graduate Program Scholarship

2006: . Med-Eng Systems Employee of the Year Award

2000: . Winner of the Governor General's Gold Medal
. Ryerson University Graduate Program Scholarship
. AIAC Research Excellence Award: Winner of Best Student Paper

1999: . First prize for CSME Student Design Paper Competition, CSME Conference on Multidisciplinary Design in Engineering

1997 – 2000: . Published Journal papers in AIAA, CSME, Computer and Structures, and International Journal of Impact Engineering
. Published conference papers in AIAA, CSME, CASI, ICAS, and AIAC

1996: . The Board of Education for the City of Toronto: Centennial Scholarship

INDUSTRY EXPERIENCE

Apr 2007-Jan 2008 (Independent Contractor on M113-LE Program)
Department of National Defense, Gatineau, Quebec
Systems Engineer

. Conduct tradeoff studies on vehicle armoring to aid weight, cost, and performance decisions
. Provide research and engineering design expertise on crew survivability systems such as blast blanket, anti-fire explosion suppression system, micro-climate cooling system, driver vision enhancement, belly armour, impact seating system etc.
. Assist in preparation and planning of vehicle blast testing and evaluation for various survivability equipment
. Liaison with government contractors to ensure major up armoring projects are completed on schedule and budget
. Provide project management, engineering expertise, and technical recommendations on numerous survivability initiatives
. Generate material/ performance specifications, test plans, and evaluation plans for vehicle systems
. Coordinate, attend and manage various survivability upgrades testing with DRDC, DEW Engineering and NRC, this included but not limited to, bar armour, impact seating system (ISS), driver vision enhancement (DVE), anti-fire explosion suppression system (AFESS), and blast blanket;
. Facilitate Design, Development and Validation of pre-production prototypes
. Assist in performing life cycle management on survivability enhancements for M113 vehicles
. Utilized MS Project, MS Office, RDMINS, SmartDraw

Nov 2006- Mar 2007 (Consultant)
Revision Military Eyewear, Montreal, Quebec
Project Manager- SOFGAP (Special Operations Forces Goggle Adaptive Protective)

. Managing the scope, schedule, cost, resources and execution of primarily SOFGAP project
. Development of design validation and verification techniques for combat eyewear equipment
. Management of existing military eyewear products to ensure customer feedback are incorporated
. Development, testing, and validation of pre-production military eyewear prototypes
. Developed quality requirements and devising means to confirm requirements are met
. Development of procurement plans and implementing procurement plans
. Liaison with customer to ensure project milestones and monthly reporting is satisfactory
. Conduct cost benefit analysis
. Identifying and assessing project risk
. Utilized MS Project, MS Office, Outlook, Visio

Aug 2005 – Nov 2006
Med-Eng Systems Inc., Ottawa, Ontario
Materials Scientist

. Resident authority in researching, evaluating, & recommending new materials from fiber and fabric suppliers such as Dupont, Honeywell, DSM, Barrday, Hexcel, for use in Combat Support Equipment
. Keep abreast of new and emerging technologies in the field of protective materials for use in areas of blast attenuation, fragmentation, ballistic, heat and flame, cooling, CBRN resistance
. Make project management decisions in compliance with the company vision and targets
. Supervise a team of designers and engineers; providing technical guidance and support
. Conducting and supervising the engineering redesign, modeling, validation, environmental and ballistic performance testing and documentation of EOD (Explosive Ordnance Disposal)
. Creates and executes project work plans and revises as appropriate to meet changing needs and requirements
. Assist in preparation of training manuals for EOD ensemble
. Write material and performance specifications, test plans, test matrices
. Design, analysis, and testing of EOD for fragmentation, ballistic, blast, blunt impact, heat & flame resistance.
. Testing and evaluation of soft and hard armour using Mil spec, NIJ, and NATO standards
. Support design to cost and producibility, survivability and sustainability studies of EOD
. Contribute to the development of fabrication process for various materials integration into existing manufacturing process
. Updates job knowledge by participating in conferences, seminars, continuing education
. Utilized MS Project, MS Office, Outlook, CF Design, MATLAB

Jan 2004 – Aug 2005
GMA Corporation, Guelph, Ontario
Project Manager-ULCANS Technical Lead

. Build and maintain high performing team including recruiting, resource allocation, performance management, problem solving, and objective setting
. Work closely with staff of other departments to ensure that the project scope, change orders, schedules, reporting and budgets are accurately planned, prepared, monitored, communicated and met
. Evaluate proposed changes for compliance with project needs (schedule, budget, quality)
. Analyze causes of variances between actual and budgeted income and expenses, and recommend actions to perform in accordance with the budget
. Establish working relationships with national and international clients and suppliers
. Mentoring mechanical and manufacturing engineers in equipment management team to develop combat support equipment
. Responsible for ongoing customer satisfaction as well as managing customer relationships
. Provide engineering drawings and technical data to facilitate ILS activities
. Prepare material specifications and SOW to aid material and equipment procurement
. Managing and coordinating the preparation of technical specifications, proposals, and literature, as well as, test reports
. Run tests to ensure products designed are process friendly with in-house manufacturing process
. Utilized SAP, MS Office, MS Project, Outlook

Jan 2002– Jan 2004
General Dynamics Land Systems Canada (Formerly General Motors Defense), ***London, Ontario***
Survivability Engineer

. Research and option analysis, prototyping & testing of advanced armour retrofit solutions for LAV 111
. Ensure that customers receives superior products or services
. Perform project-engineering work from design to implementation in accordance with company standards
. Conduct impact analysis using FEA, practical skills, and other engineering principle to design safe products
. Investigate problems and requirements of projects, and develop and implement plans for solutions in line with economic, personnel, and environmental considerations
. Act as life cycle manager for all add on armour parts
. Determine the best selection process to meet the project price, schedule and quality
. Conduct options analysis on designs in a working group to down select to best option(s)
. Ensure all deliverables are reviewed and approved by the Engineering Manager
. Advise and guide engineers/clients/contractors in the procedures for the set up of retrofit solutions
. Support and resolve engineering quality assurance, and manufacturing problems in production
. Conduct ballistic, fragmentation, fatigue, and other acceptance/conformance tests for Stryker vehicle
. Interface with and support internal/ external customers and suppliers
. Write test plans, test matrices, quality and process control procedures to ensure products are to spec
. Review supplier's bids based on total life-cycle costs and prepare requisitions for equipment purchase
. Utilized AMAPS, Bid Tactical, ANSYS, ANSYS DYNA, MATLAB, Lotus Notes, Visio, MS Office, MS Project

Jan 2000 – Jun 2001
Aceram Technologies Inc., Kingston, Ontario
Test Engineer

. Develop quality and test procedures, inspection and work instructions, BOM, parts and assembly drawings
. Identify issues and concerns when they occur and communicate risk to all departments
. Work with clients to define the purpose, risks and financial basis for the project
. Ongoing contribution to the firms' reputation and ability to generate new business/work
. Communicate ideas for improving company processes and policies
. Design and development of military personal protective equipment
. Coordinates engineering effort with Project Manager when assigned
. Study various analytical FEA models to predict penetration mechanisms of body armour systems
. Complete product development cycle from conceptual design to manufacturing
. Integration of ballistic penetration codes into AI software to optimize design
. Procure material and fabricate structural armour surrogates based on analytical & numerical results
. Design & develop molds; Test armour surrogates using drop test and gas gun. Conduct tests for fatigue, tensile stress, interlaminar shear stress, and flexural stress of composite laminate
. Utilized MATLAB, C, ANSYS, LS-DYNA, HyperMesh, FEHT, MAPLE, Access, MS Office, Visio

Apr 1999 – Sept 1999
Ryerson University, Toronto, Ontario
Research Engineer
. Developed a hybrid approach to structural optimization through software integration (MATLAB & ANSYS)
. Conceptual design of various aspects of the Boeing 717 aircraft
. FEA of aircraft wing & fuselage structure (Extensive usage of ANSYS), stability and control, & aerodynamics
. Project objectives - Weight reduction
. Represent Ryerson at MMO, CSME, CASI, AIAA, and AIAC forums and conferences
. Write journal and conference papers for publication
. Presented conference papers, and composed posters for presentations
. Utilized AutoCad, MATLAB, IDEAS, ANSYS, CATIA, Photoshop, Access, MS Office, MS Project, Visio